1100E Series

Fiber Optic
HD-SDI Digital Video
Transport System

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SAFETY INSTRUCTIONS AND COMPLIANCE DECLARATIONS

PLEASE OBSERVE THE FOLLOWING SAFETY PRECAUTIONS AS OUR PRODUCTS CONTAIN

CLASS I LASER PRODUCTS

WARNING

Do not disconnect the fiber optic connector while the unit is powered up. Exposure to laser radiation is possible when the laser fiber optic connector is disconnected while the unit is powered up.

Although the fiber optic connectors in this product emit only Class 1 energy that is below the levels considered to be hazardous, one should never stare directly into a fiber optic connector or an unconnected fiber end unless one can be certain that no exposure to laser energy could occur.

CAUTION

This manual is intended for use by trained service personnel. The use of controls, making adjustments, or performing operations other than those specified may result in hazardous radiation exposure.

The following label or equivalent is located on the surface of laser products. This label indicates that the product is classified as a CLASS 1 LASER PRODUCT.

Class 1 Laser Product
Complies with FDA performance
standards for laser products
except for deviations pursuant
to Laser Notice No. 50,
dated July 26, 2001

SURGE PROTECTION DEVICE RECOMMENDED

This product contains sensitive electrical components that may be damaged by electrical spikes, surges, electric shock, lightning strikes, etc. Use of surge protection systems is highly recommended in order to protect and extend the life of your equipment.

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1.0 PRODUCT DESCRIPTION

The 1100E Series is a high performance, yet affordable, Fiber Optic HD-SDI Digital Video Transport System. The standard 1100E system is designed to transport one (1) channel SMPTE-292M HD or SMPTE-259M serial digital video signal over long distance through either singlemode or multimode fiber. Many versions of optical transmitter and receiver combinations are available to address different distance requirements.

Due to the use of advanced digital fiber optic transmission technology, no user adjustments are required in the 1100E system, enabling quick setup and trouble-free operation with standard non-reclocking configuration. The 1100E can handle ATSC, SDI, DVB-ASI, HD, and many other video formats. One can also choose the reclocking configuration which provides SMPTE-292M HD, SMPTE-259M SDI and DVB-ASI signal regeneration.

The 1100E comes with two packaging options: a rugged, standalone, and compact unit, or a plug-in card for a card cage system. Panel connectors are provided for digital HD-SDI video (BNC connector) and fiber connection (FC-type for the singlemode version, or ST-type for the multimode version). The 1100E can be easily monitored by front panel LED indicators for channel activity. Transmitter units provide 1 loop-through output for monitoring, and the receiver provides 2 output for monitoring and recording.

Front panel LED indicators provide power, optical link and signal detect reclocking status as illustrated in Figure 1-1.

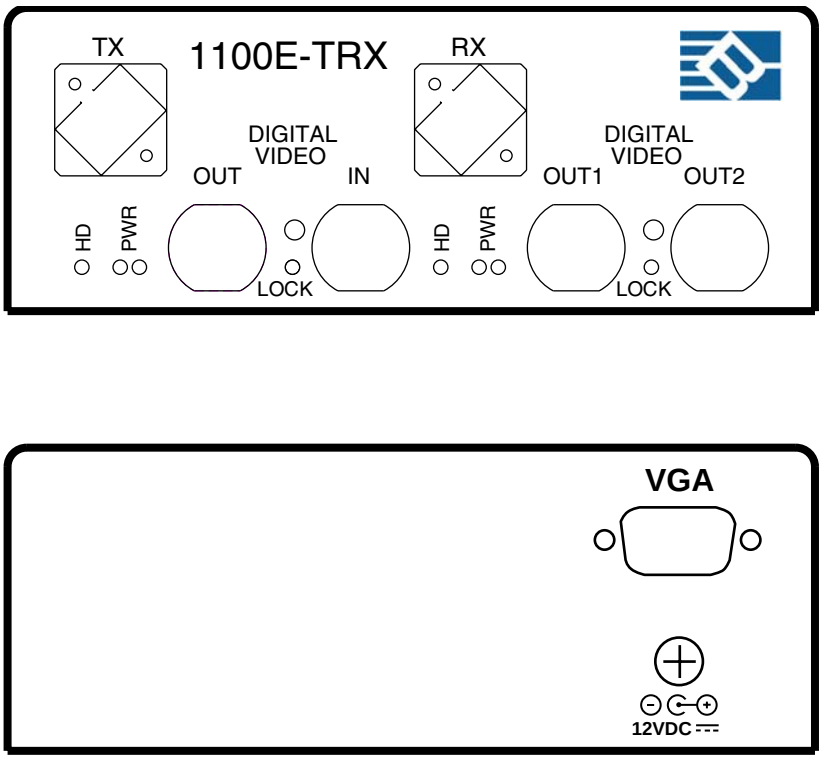

Figure 1-1
1100E Front/Rear Panels

2.0 SETUP

The BCI 1100E Series units are used in pairs. For unidirectional systems, one 1100E transmitter unit is located at the near end and connected to the 1100E receiver located at the far end of the link, connected through one optical fiber. Each unit provides a separate electrical interface connector for the various video signals. For bi-directional systems, one 1100E transceiver unit located at the near end and connects to an 1100E transceiver unit located at the far end through two or one (WDM models) fiber. Connections are one to one between the two units. Figure 2-1 depicts two typical installations.

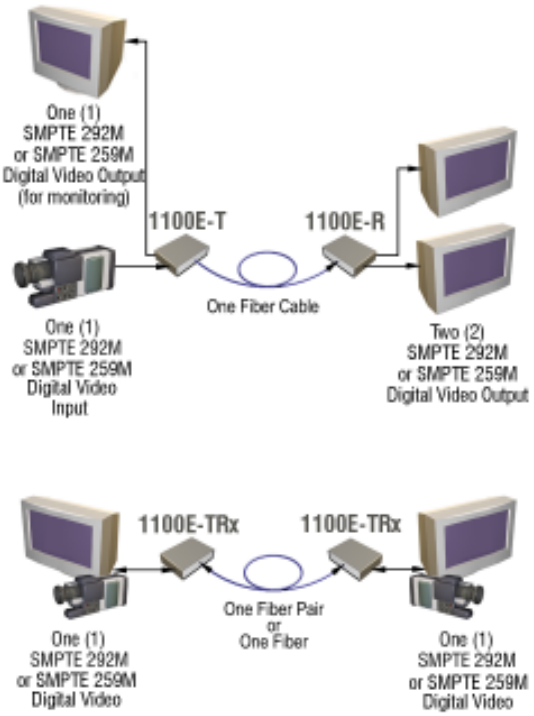

Figure 2-1
1100E Setup

2.1 Mounting

Before installing the units into your housing, make sure there is enough space to pull and connect both the electrical and optical cables without stressing them beyond the manufacturer's limitations (also known as the bend radius minimum).

2.2 Cabling and Connectors

In order to setup the BCI 1100E properly, make sure to observe the following instructions when installing the proper cables. The 1100E requires two parts to the cabling setup, the electrical and the optical. For the optical part, observe the following procedures, as there are various types of optical connectors as illustrated on the following page.

2.2.1 Electrical Cable Connection

For the electrical connection, it is required that the following steps be observed when connecting the video devices, as they require special attention. They are described in the following section.

2.2.1.1 HDTV Digital Video Interface

The 1100E's provide one BNC connectors for video input ports and two BNC connector for video output ports. Serial Digital Video signal are sent over a 75-ohm coax cable terminated in a BNC connector (e.g., Belden 1694A or better). The data rate is 1.485 Gbps. Use the following steps for connecting the video.

Proceed with the following setup when connecting the video sources and receivers to the 1100E.

1. Connect the user's serial digital video source to the digital video IN connector on the 1100E transmitter unit.
2. Connect the digital video OUT or/and BNC connectors on the 1100E receiver unit to the user's digital video monitor.

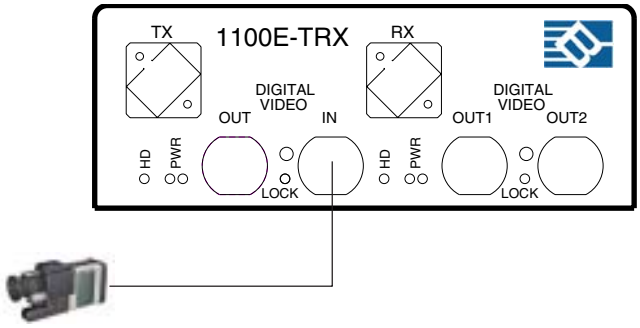

Figure 2-2
Electrical Connection

2.2.2 Optical Fiber Connection

Most cable manufacturers identify individual fibers in the fiber cable. Select an appropriate terminated fiber. Each unit's optical ports in the system are specified for use with Multimode (62.5/125 micron) fiber, or Singlemode (9/125 micron) fiber. Follow the ensuing instructions for installing and connecting the fiber optic links:

1. Ensure the power is off before proceeding with the fiber optic cable installation.

2. Prior to connecting the fiber optic cables, remove and save the dust caps from the optical port of both the 1100E units and the user's device. Clean the fiber optic connector and use a lint-free cloth dampened with alcohol to thoroughly wipe the sides and end of the ferrule.

3. Cross-connect the fibers from one unit to the other connecting the near end 1100E unit's optical TX port to the far end 1100E unit's optical RX port as illustrated in Figure 2-3. Observe the type of connector you have and connect the optical connector by referring to the legend provided in Table 1, and following the instructions and guidelines.

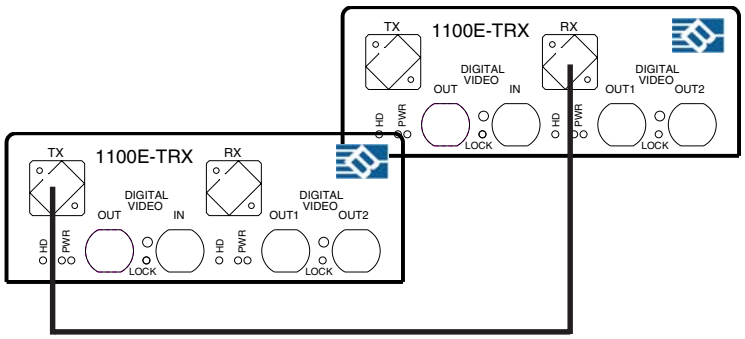

Figure 2-3
Fiber Optic Connection

Connector	Illustration	Description
ST	ST Connector	Hold the connector by the strain-relief boot* and insert the connector ferrule into the port. Rotate the boot until the "key" engages in the slot of the coupling. Push the connector housing forward until it can be turned clockwise to latch to the port.
FC	FC Connector	Hold the connector by the strain-relief boot* and insert the connector ferrule into the port. Rotate the boot until the "key" engages in the slot of the coupling. Push the connector housing forward and screw clockwise until it is tight.

Table 1
Fiber Optic Connector Legend

2.3 DC Power Connection

Congratulations! You are now ready to power up the BCI 1100E and set up your network connection. In order to make sure that you have a proper installation, please observe the following:

1. Your AC jack has power.
2. The 12VDC power supply is working.
3. Your electrical system has proper grounding (this ensures that your power supply does not suffer from voltage variations).
4. **Power Surge Protection. This is optional**, but highly recommended. A UPS system provides voltage regularity as well as prevents spikes from occurring, thus protecting your 1100E from sensitive voltage conditions.

The 1100E derives power from an external 12VDC power supply. This power supply is a wall-mounted AC/DC adapter, 95-240 VAC, 47 Hz to 63 Hz, at 1A. This power supply comes standard for the 1100 unless otherwise specified.

To provide power to the 1100E, simply connect the power supply, already provided with the units, and connect it to the wall jack. (You will find one power supply per unit). Once the power supply has been connected to the wall jack, connect the 12VDC to the unit and the unit should power up immediately.

If you have any problems or concerns, regarding the installation, make sure that you have taken the proper steps to ensure a proper power connection. Otherwise, feel free to contact us for any questions you may have.

3.0 OPERATION

After the installation procedure is completed, the units are ready for operation. To operate the BCI 1100E units, simply apply power as indicated in the previous step. Note that the following front panel link status indicator, shown in Table 2 will be activated.

4.0 MAINTENANCE AND TROUBLESHOOTING

4.1 Maintenance

There is no operator maintenance other then keeping the units clean. However, observe the following light indicators to make sure that the unit is working properly:

HD (TX)	This GREEN LED indicates that the 1100E copper receives a valid HD 1.485 Gbps signal.
PWR (TX)	This RED LED is on when the 1100E unit has been powered with no copper connections. This LED turns GREEN when a valid digital video source has been received.
LOCK (TX)	This GREEN LED is on when the data recovery is locked to the incoming copper data.
LOCK (RX)	This GREEN LED is on when the data recovery is locked to the incoming optical data.
HD (RX)	This GREEN LED indicates that the 1100E optical receives a valid optical 1.485 Gbps signal.
PWR (RX)	This RED LED is on when the 1100E unit has been powered with no optical connection. This LED turns GREEN when a valid optical link has been established.

Table 2
Status Indicators

4.2 Troubleshooting

If the BCI 1100E units do not operate properly after installation, check for possible cable breaks, loose connections, and incorrect cable connections. If a problem exists on the fiber link, please check your fiber connectors for improperly cleaned fiber cables and connectors. If problems persist that may be fiber related, contact BCI at 1-800-214-0222 for further assistance.

For electrical problems, perform the following troubleshooting procedures:

1. **If the POWER indicator is OFF, check for the following:**
   a. The line cord is plugged into the unit and your outlet has power.
   b. The 1100E unit is switched on.
   c. Check for blown fuses (located in the rear panel-entry module).

2. **If the POWER indicator is ON, but the Optical Link indicator is OFF, check for the following:**
   a. Make sure the appropriate (Singlemode or Multimode) fibers are being used.
   b. Fiber and fiber connectors are not broken. Ensure that the optical loss does not exceed the specified optical power attenuation (see Section 5.0 Specifications for the optical power budget).
   c. For each unit, the transmit (TX) fiber is connected to the other unit's receiver (RX).

3. **If the POWER indicator and Optical Link indicator are ON, but the audio/video channels are not operating, then:**

a. Check to see that the attached user equipment is turned on.

b. Both ends of the link are connected to the corresponding equipment and to the same corresponding channel port.

c. Cable connections at both the video/audio channels are securely fastened to each connector. Turn the power off, then back on to reset the link.

d. Output levels of the user's video and audio sources are not above the allowed input levels of the 1100E units (see Section 5.0 Specifications).

5.0 SPECIFICATIONS

Electrical

Signal Format	SMPTE-292M HD-SDI or SMPTE-259M SDI Digital Video and many others
Data Rate	143 Mbps to 540 Mbps, 1.5 Gbps
Signal Level	800mVp-p +/- 10%
Return Loss	>15 dB
Connector	75 Ohm BNC

Physical

Dimension: (H x W x D)	
Standalone unit	1.72" x 4.36" x 8.75"
Card-cage plug-in card	5.24" x 0.94" x 11.6"
Power Level	+12 VDC @ 1.0 A
Operating Temperature	0 to +50°C
Humidity	0 to 95% RH, non-condensing
Status Indicators	Power, Optical Link, Signal Detect, Reclocking

Optical

Fiber Type	Multimode and Singlemode
Number of Fibers	2 or 1
Wavelength	1310 and/or 1550 nm
Fiber Optic Connector	ST (Multimode) FC (Singlemode)

6.0 SERVICE PROCEDURE

6.1 Replacement Policy

Standard products found defective on arrival (DOA) will be replaced, based on availability, within 24 to 48 hours anywhere in the U.S. Please call Customer Service at **800-214-0222** for information.

6.2 Return/Repair Service

The 1100E System contains no user serviceable components. If you have a problem with your unit, please contact the Customer Service Department. To facilitate our return/repair processing please contact Broadata Communications, Inc. to obtain a Return Material Authorization (RMA). Please include the following information:

- Product model number
- Serial Number
- Complete description of problem
- Hardware installation description

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Torrance, CA 90505
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(310) 530-1416
(310) 530-5958 (Facsimile)
e-mail: CustomerService@Broadatacom.com
Website: www.broadatacom.com

7.0 LIMITED WARRANTY

Broadata Communications, Inc. (BCI) warrants, for a period of one year from date of shipment, each product sold shall be free from defects in material and workmanship. BCI will correct, either by repair, or at BCI's election, by replacement, any said products that in our sole discretion prove to be defective and are returned to the manufacturing location within 30 days after such defect is ascertained. All warranties are limited to defects arising under normal use and do not include malfunctions or failure resulting from misuse, abuse, neglect, alterations, electrical power problems, usage not in accordance with product instructions, improper installation, or damage determined by BCI to have been caused by the Buyer or repair made by a third party. Limited warranties granted on products are to the initial customer end-user and are not transferable. OUR LIABILITY UNDER THIS WARRANTY SHALL IN ANY CASE BE LIMITED TO THE INVOICE VALUE OF THE PRODUCT SOLD AND BCI SHALL NOT BE LIABLE TO ANYONE FOR CONSEQUENTIAL OR INCIDENTAL DAMAGES ARISING FROM THE USE OF ITS PRODUCTS OR THE SALE THEREOF. We make NO WARRANTY AS TO THE MERCHANTABILITY OF ANY GOODS, OR THAT THEY ARE FIT FOR ANY PARTICULAR PURPOSE OR END APPLICATION NOR DO WE MAKE ANY WARRANTY, EXPRESSED OR IMPLIED OTHER THAN AS STATED ABOVE.

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